

# Software Development Improvement with SFIM



**René Krikhaar**

VU University Amsterdam

ICT NoviQ

**Martin Mermans**

Philips Medical Systems

# Agenda

- Introduction
- Change Management Models
- CMMI and 7S model
- SFIM: Seven Forces Improvement Method
- SFIM Case Study
- Conclusions



# Introduction

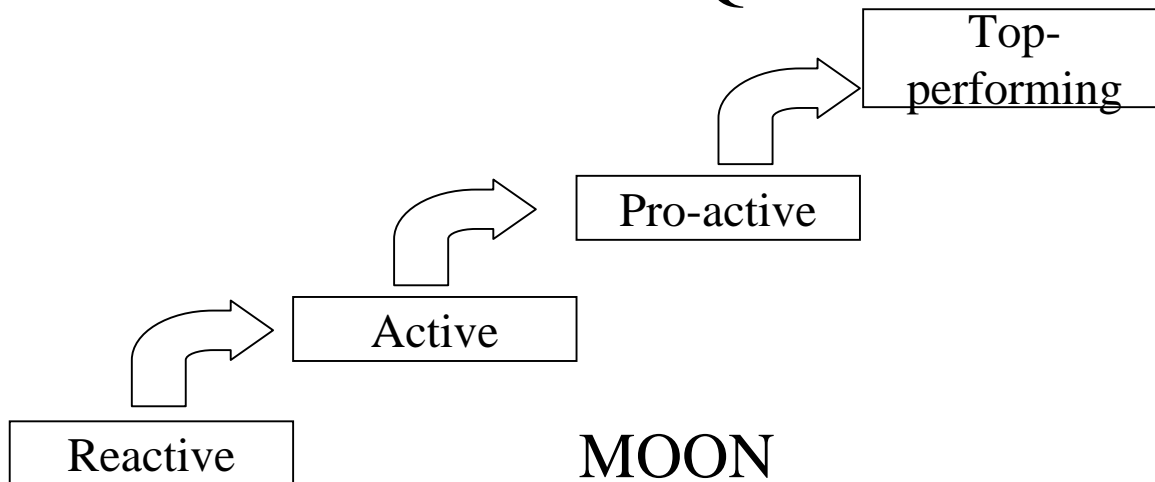
- Only 18% of companies starting with CMM continue to level 4 or 5
- SW Process Improvement in Industry
  - In context of system engineering
- Questions
  - Why is SPI not sustainable by nature?
  - What are the influencing factors?



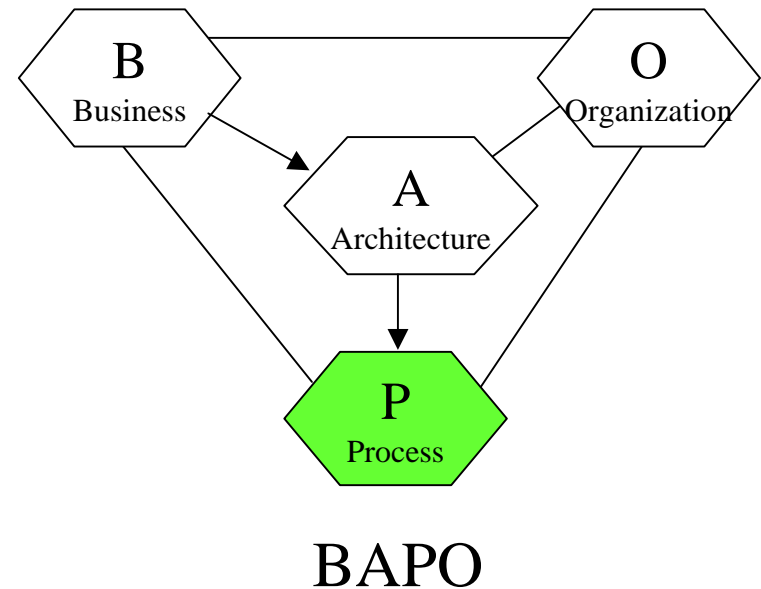
# Change Management Models -1-

Leader- ship	People	Process	People Results	Key Performance Results
	Policy & Strategy		Customer Results	
	Partnerships & sources		Society Results	

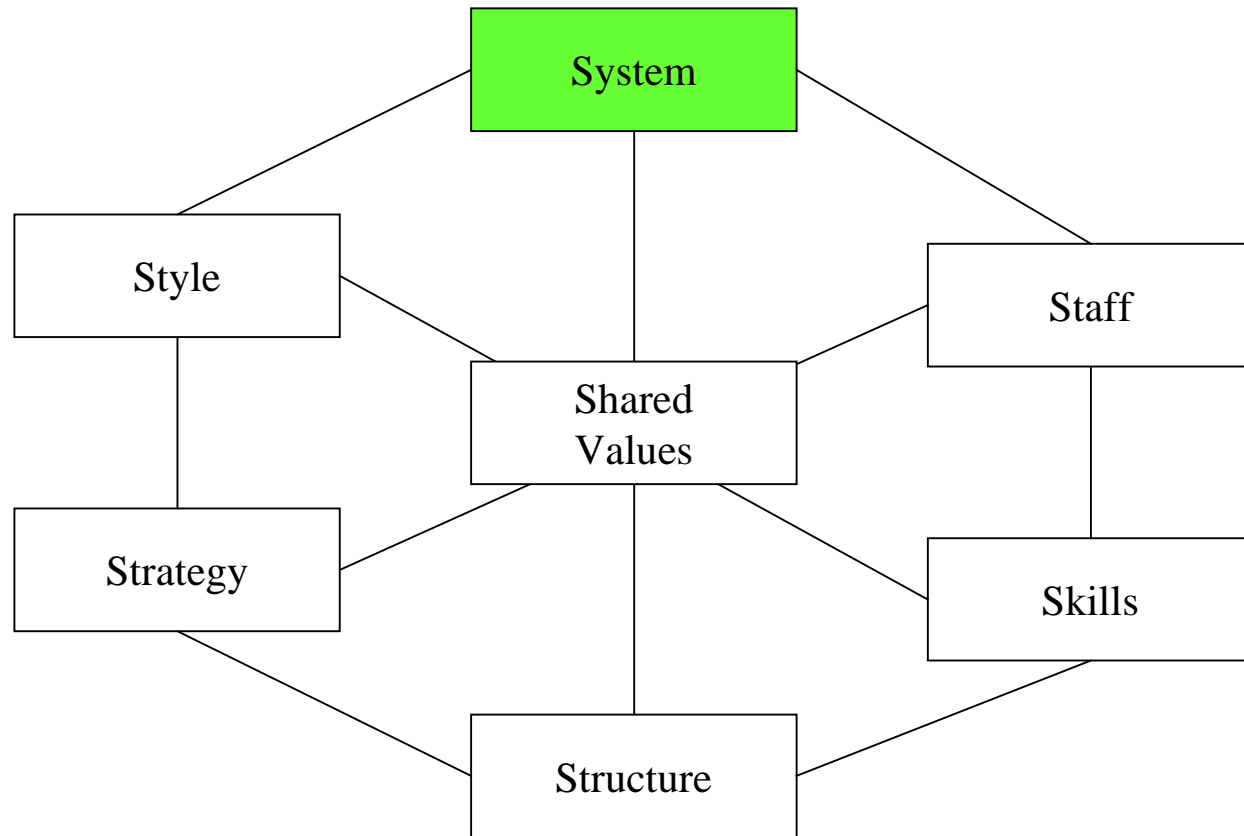
EFQM



# Change Management Models -2-

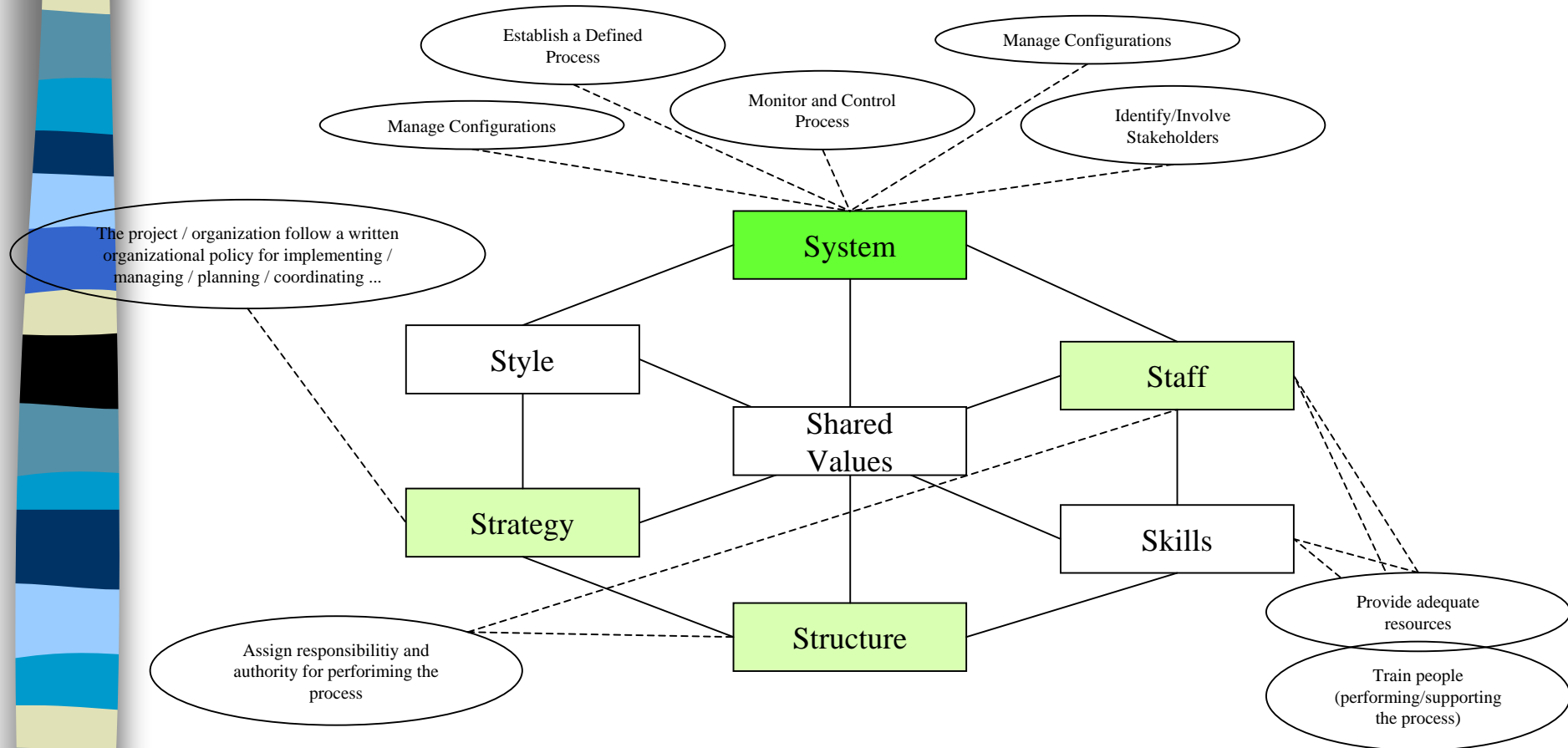


# Change Management Models -3-



7S Model

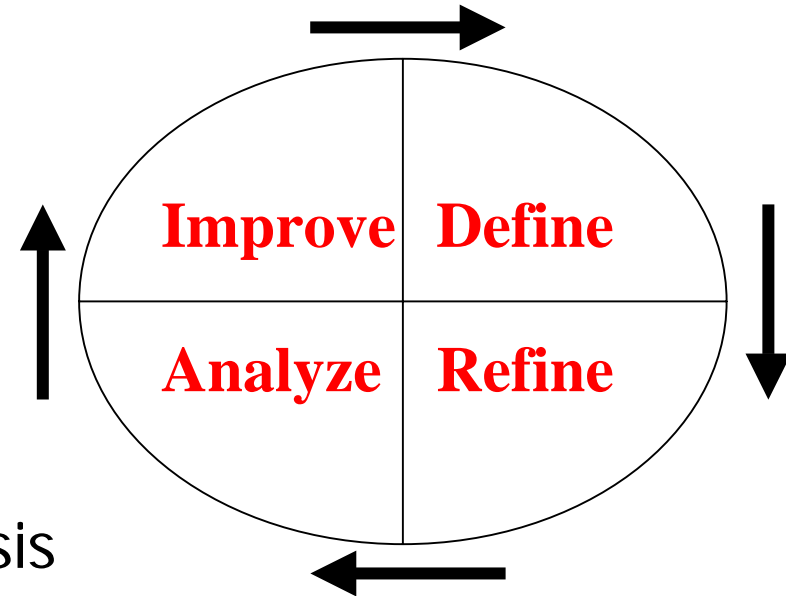
# CMMI and 7S model



# SFIM

## Seven Forces Improvement Method

- *Define*: in SMART terms
- *Refine*: in terms of 7S
- *Analyze*: Force Field Analysis
- *Improve*: Start with restraining forces !





# Force Field Analysis example

Driving Forces		Restraining Forces	
Structure			
Coding rules are supported by Technical and Line Management	➔	➡	Project Management has other objectives than long term maintenance
Strategy			
High Quality is one of the Business drivers	➔	➡	
Skills			
	➔	➡	Affiliation with high tech product results in less attention to software engineering
Staff			
Highly experienced staff hired Technical people at all level involved	➔	➡	
Style			
Willing to adhere to coding standards	➔	➡	Forces to change rules towards individual's idea of good rules Project Management is stronger than Technical and Line Management
Systems			
Processes are in place for many years Processes are embedded to manage violating software engineers	➔	➡	
Shared values			
Only high quality products will be released	➔	➡	Discussing decisions is part of the culture

# Case Study

- Philips Medical Systems
- 300+ Developers
- Growth from 100 to 500 Systems per year
- 1995: CMM Level 2; 2002: CMM Level 3 (SW)
- CMMI ~ Level 2 (all departments)
- Matrix organization
  - Line Mgt: resources, Quality, Long Term
  - Project Mgt: Short Term, Functionality

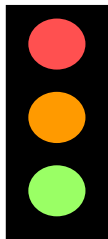
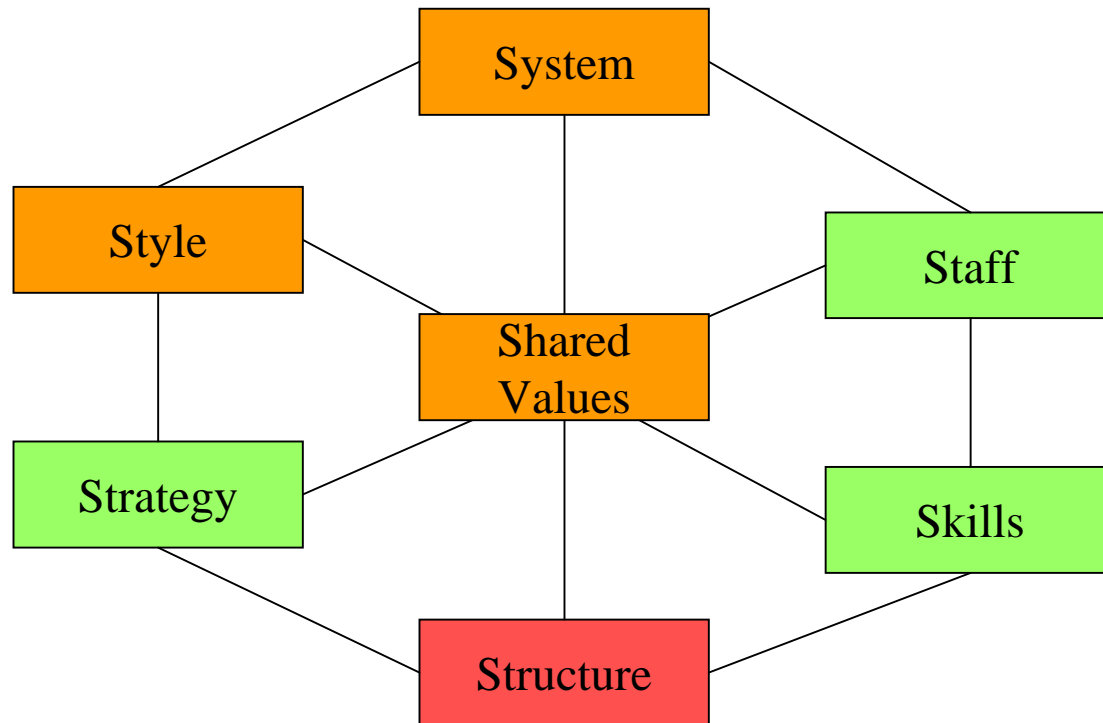


# Project Planning and Control

- *Define*: Reach CMMI level 2 for system development in 2 years
- *Refine*: Skills (training), Shared Values (belief in benefits of sound PM)
- *Analyze*: (see next sheet)
  - Project Management stronger than Line Management
- *Improve*: Structure (remove hierarchical layer in Line Management)



# Analyze: Project Plan & Control

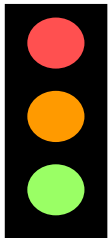
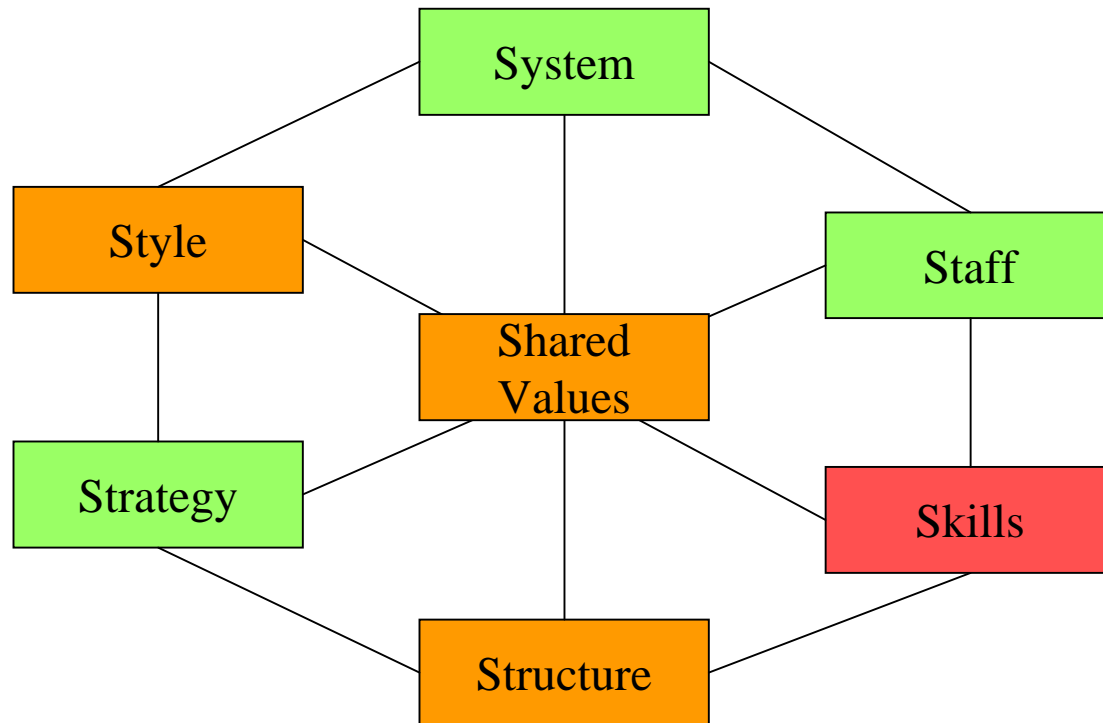


# Software Quality

- *Define*: Introduce coding standards; apply it to all code (take care of legacy)
- *Refine*: Structure (Line, Project, Technical)
- *Analyze*: Skills (lack of software experience)
- *Improve*: Train people on the job with SW experts



# Analyze: Software Quality



# Other Areas of Attention

- System Testing
  - *Strategy missing*
- Process Database
  - *No shared value; hampering structure*
- General System Structure
  - *No Shared Value; Structure good be better*
- Peer Reviews in SW department
  - *"Hero" approach*
- Use Case Introduction for System Features
  - *Skills missing*

# Conclusions

- Development Improvement must be seen in broader context than process
- Sustainable Improvement should pay attention to all 7S-es
  - Restraining Forces in an organization can blow away any improvement

